GEOCARPON MINIMUM (CARYOPHYLLACEAE), NEW TO TEXAS

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ABSTRACT

Geocarpon minimum, a federally threatened species, is documented for the flora of Texas for the first time. Approximately 200 plants were found in an extensive saline prairie near the floodplain of the Neches River in Anderson County, Texas. Included is a general description of the habitat, known distribution of the species, and associated flora in Texas.

RESUMEN

Geocarpon minimum, una especie de la lista federal de plantas amenazadas de extinción se documenta para la flora de Texas por primera vez. Se encontraron aproximadamente 200 plantas en una llanura salada cerca de la llanura de inundación del Neches River (o Río Neches) en el condado de Anderson, Texas. Se incluye una descripción general del hábitat, la distribución conocida de la especie, y la flora asociada en Texas.

Geocarpon minimum MacKenzie (geocarpon, tiny Tim, earth fruit) is listed as a federally threatened species by the U.S. Fish and Wildlife Service and is currently known from Arkansas, northwestern Louisiana, and southwestern Missouri (MacKenzie 1914; Moore 1958; McInnis et. al. 1993; USDA, NRCS 2004; USFWS 1993). In Missouri, *Geocarpon minimum* occurs in glades and other open, sparsely vegetated areas on shallow soils over sandstone outcrops, often in shallow depressions (Morgan 1980; Palmer & Steyermark 1950; Steyermark, et. al 1959; Thurman 1989; USFWS 1993). In Arkansas it is typically found in sparsely vegetated areas on saline prairies (Moore 1958; Orzell & Bridges 1987; Pittman 1988; Rettig 1983; Shepherd 1987; USFWS 1993). Soils in both habitat types are high in magnesium or sodium (Rettig 1983). This species was brought to the attention of the former Texas Natural Heritage Program in 1993 by Peggy Horner of the Missouri Department of Conservation as potentially occurring in northeast Texas. Several surveys were then conducted on saline prairies in East Texas,

including the Davy Crockett National Forest, Temple-Inland Forest Products Corp. (Temple) property, and other private lands.

In summer of 2003, we discovered a large saline prairie complex occurring on Temple property in Anderson County, Texas, just above the floodplain of the Neches River. This prairie was surveyed in the summer and fall of 2003 and found to contain several halophytes typically associated with *Geocarpon minimum*. In surveys conducted in early March 2004, approximately 200 plants of *Geocarpon minimum* were discovered at eight stations throughout the 75 acre saline barren complex. All of the plants occurred on the edge of sparsely vegetated areas commonly referred to a "slick spots" (USFWS 1993). These slick spots vary in size from one to approximately thirty square meters. They have very high sodium content and are typically devoid of any vegetation, with the exception of *Sibara virginica*, *Talinum parviflorum*, *Plantago pusilla*, and *Cleomella angustifolia*. This vegetative edge around the slicks is referred to as a "cryptogamic lip," where a spongy, leathery crust of moss protonemata, lichens, liverwort thalli, *Nostoc* sp., and the associated micro-flora interact to cement the lip in place (Shepherd pers. comm.; USFWS 1993). Woody species associated with *Geocarpon* adjacent to these slicks includes, *Celtis laevigata* spp. *laevigata*, *Crataegus* spp., *Juniperus virginiana*, *Opuntia macrorhiza*, *Pinus taeda*, *Quercus similis*, *Sabal minor*, *Smilax bona-nox*, *Vaccinium arboreum*, and *Ulmus crassifolia*. Associated herbaceous species include *Anagallis minima*, *Aphanostephus skirrhobasis*, *Astranthium integrifolium*, *Chaetopappa asteroides*, *Cleomella angustifolia*, *Coreopsis tinctoria*, *Crassula aquatica*, *Draba brachycarpa*, *Evolvulus sericeus*, *Gratiola flava*, *Houstonia rosea*, *Houstonia micrantha*, *Houstonia pusilla*, *Hypericum drummondii*, *Isolepis carinata*, *Krigia occidentalis*, *Lepuropetalon spathulatum*, *Ophioglossum crotalophoroides*, *Plantago pusilla*, *Portulaca* spp., *Rumex hastatulus*, *Sagina decumbens*, *Schoenolirion wrightii*, *Sedum nuttallianum*, *Sibara virginica*, *Sporobolus vaginiflorus*, and *Talinum parviflorum*. The surrounding topography also includes mima mounds with micro highs and lows. The Brimstone Silt Loam described in McInnis et. al. (1993) may be represented in this saline prairie. However, in Coffee (1975), this area is not differentiated from the surrounding bottomland soil type, and saline soils are not mentioned. The mapped soil series for the prairie area is classified as Nahatche-Wehadke Soil Series with typically loamy bottomland soils. However, in an older soil survey of Anderson County from 1890, the Anderson County saline areas are briefly described (Department of Agriculture, Insurance, Statistics, and History 1890). Collection data for *Geocarpon minimum* follow:

UNITED STATES. Texas. Anderson Co.: 120 m NE of a roadside park, 0.1 mi E of the jct. of U.S. Hwy 84 and Neches River, saline barren complex, 8 Mar 2004, *J. Singhurst 12921, E. Keith, S. Cook, & B. Shepherd* (BAYLU, TEX)

Fig. 1. Close up of *Geocarpon minimum*.

Fig. 2. Habitat of *Geocarpon minimum*. Plant found along edges of "slick spots."

TAXONOMIC DESCRIPTION

Glabrous winter annual, stems simple or branched at the base, the branches few, erect or spreading ascending, mostly 3–4 cm high and less than 0.5 mm thick, often a bright reddish or pale purplish color. **Leaves** simple, opposite, green or reddish in color, 3–4 mm long, narrowly oblong or ovate-oblong, the margins entire, and the apex acute. **Flowers** usually axillary, regular, funnelform-campanulate; sepals 5, 3–4 mm long, reddish or reddish-green; petals absent; stamens 5; staminodes 5; ovary superior, lance-ovoid, somewhat trigonous, about the length of the sepals. **Fruit** is a capsule containing numerous, funicular seeds, 0.5 mm long (NatureServe 2004; Steyermark 1963).

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